

# Plastic Pipe Rule

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# Safety Moment



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Summer Time







# Plastic Pipe Rule



## DEPARTMENT OF TRANSPORTATION

### Pipeline and Hazardous Materials Safety Administration

#### 49 CFR Part 192

[Docket No. PHMSA–2014–0098: Amdt. No.  
192–124]

RIN 2137–AE93

### Pipeline Safety: Plastic Pipe Rule

**AGENCY:** Pipeline and Hazardous  
Materials Safety Administration  
(PHMSA), Department of Transportation  
(DOT).

**ACTION:** Final rule.

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Published: November 20, 2018

Federal Register  
Volume 83, Number 224

# Plastic Pipe Rule - Summary



PHMSA has amended the Pipeline Safety Regulations that govern the use of plastic piping systems in the transportation of natural and other gas.

These amendments are necessary to:

- Enhance pipeline safety
- Adopt innovative technologies and best practices
- Respond to petitions from stakeholders.



# Plastic Pipe Rule - Summary



The amended regulations apply to **new, repaired** and **replaced** plastic pipe used in the transportation of natural gas.

**DATES:** The effective date of these amendments was January 22, 2019

- Some aspects of Tracking and Traceability – new 16 digit code;
- Increasing the design factor of PE pipe;
- Allows the use of Polyamide-11 and 12 pipe and components to it full pressure capability;

# Plastic Pipe Rule - Summary



- New standards for risers,
- More stringent standards for plastic fittings and joints;
- Stronger mechanical fitting requirements;
- The incorporation by reference of certain new or updated consensus standards for pipe, fittings, and other components;
- The qualification of procedures and personnel for joining plastic pipe;

- The incorporated 2012 editions of material standards for polyethylene (PE) and polyamide (PA-11 and PA-12) pipe require operators to mark plastic pipe with the 16 character ASTM F2897-11a markings.
- This will promote standardization in how component attributes are marked.

## Marking of Materials (§192.63)

- Plastic pipe and components manufactured after December 31, 2019 must be marked in accordance with listed specification
  - Intended to give manufacturers time to figure out application of 16 character code based on durability requirements
- All physical markings on plastic pipelines must be legible until time of installation (originally proposed as permanent)



# Case Study for Tracking and Traceability







PerformancePipe.com



**PERFORMANCE PIPE**  
Performance Pipe Company, LP

1 1/4" IPS RTB STT 80 PS2-12  
12 06 0783 W  
D-2513 / D-2683 CEE PE3408/4710 PE100  
MADE IN USA

280/0/140



03/08/2013



03/18/2013



03/08/2013

# Incorporation by Reference (IBR) of Plastics Related Standards



- ASTM D2513-12ae1: PE - updated standard that includes the requirement for the F2897 16-digit alphanumeric/barcode.
- ASTM F2785-12: Polyamide 12 (PA-12) piping and fittings
- ASTM F2945-12a: Polyamide 11 (PA-11) piping and fittings
- ASTM F2620-12: Procedures on making heat fusion joints on PE pipe.

# Increased Design Factor (PE)



- The allowable design factor for new and replaced PE pipe is increased from 0.32 to 0.40 in §192.121 under certain limitations.
- Minimum wall thickness provided for various diameters.
- The higher design factor also applies to pipe sizes less than one-inch Iron Pipe Size (IPS) and Copper Tubing Size (CTS).

# Wall Thickness Table with Error



PE PIPE—MINIMUM WALL THICKNESS AND SDR VALUES

Pipe size (inches)	Minimum wall thickness (inches)	Corresponding SDR (values)
1/2" CTS .....	0.090	7
3/4" CTS .....	0.090	9.7
1/2" IPS .....	0.090	9.3
3/4" IPS .....	0.095	11
1" CTS .....	0.119	11
1" IPS .....	0.119	11
1 1/4" IPS .....	0.151	11
1 1/2" IPS .....	0.173	11
2" .....	0.216	11
3" .....	0.259	13.5
4" .....	0.265	17
6" .....	0.315	21
8" .....	0.411	21
10" .....	0.512	21
12" .....	0.607	21

1" CTS minimum wall should be 0.101 (same error in tables for PA-11 and PA-12)

# Expanded Use of Polyamide-11 Pipe



- The design factor for PA-11 pipe remains at 0.40 in §192.121.
- Maximum operating pressure is increased from 200 psig to 250 psig if using PA32316.
- Maximum pipe diameter is increased to six inches (previously 4 inches).



# Polyamide-12 Pipe



- PA-12 pipe is permitted for use with a design factor of 0.40 in §192.121.
- Maximum operating pressure is 250 psig for pipe up to six inches in diameter.
- ASTM F2785-12 - PA-12 pipe



- §192.281 (Plastic Pipe)
  - Heat fusion joints on a PE pipe or component (except electrofusion joints) must comply with ASTM F2620-12
- §192.285 (Plastic Pipe: Qualifying persons to make joints)
  - PE Heat fusion joints (except electrofusion joints) visually inspected and tested in accordance with ASTM F2620-12

# Mechanical Fittings

- Mechanical fittings must meet listed specification
- Must be Category 1 as defined by listed specification for application material
  - A category 1 fitting provides both a seal and full pullout restraint.
- Some concerns identified related to
  - Availability of fittings 4" or larger, particularly for transitions between plastic and other materials (like cast iron)
  - PHMSA delayed the compliance to Jan. 22, 2020



# Design and Construction of Risers



- New §192.204 added for risers installed after effective date
- Must be tested to ensure safe performance under anticipated loads
- Factory assembled anodeless must be designed and tested in accordance with ASTM F1973-13
- All risers used to connect regulator stations to mains must be rigid and designed to provide adequate support and resist lateral movement.

# Design and Construction of Risers



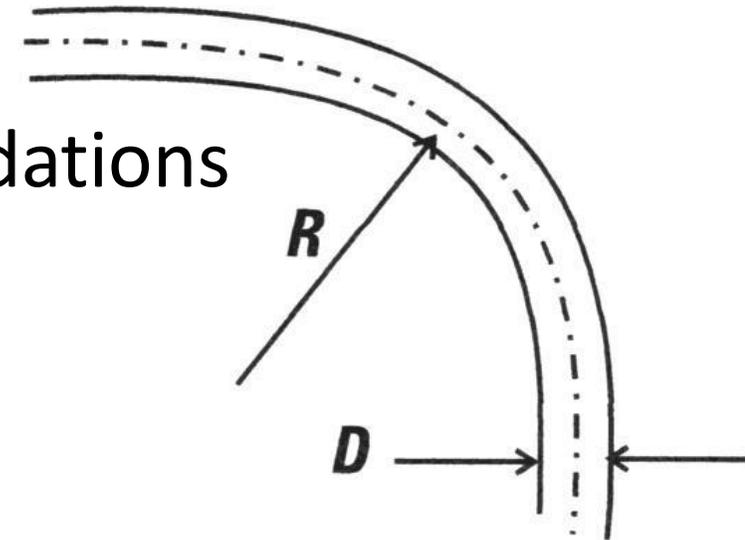
All risers used to connect regulator stations to mains must be rigid and designed to provide adequate support and resist lateral movement.

# Design and Construction of Risers

- Operators may still install field-assembled anodeless risers.



- Each operator must have and follow written procedures for storage and handling of plastic pipe and components
- Limit bend radius to manufacturer recommendations



# Trenchless Installation – §§ 192.329 and .376



“Weak link” (§192.3) must be used to ensure that the pipe will not be damaged during pulling.

Each operator must take practicable steps to provide sufficient clearance for installation and maintenance activities from other underground utilities and/or structures at the time of installation.



## §192.455(g)

- Newly installed electrically isolated metal fittings must be cathodically protected and maintained in accordance with operator's integrity management plan.
- This is not required for existing fittings.

# Repair of Plastic Pipe

## §192.720

- mechanical leak repair clamps cannot be used as a permanent repair on plastic pipe.



# Maintenance of Fusion Equipment



## §192.756

Must maintain equipment used in joining plastic in accordance with the manufacturer's recommended practices



Thank you

## Questions?

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